

Office Memorandum

TO : John F. McGuire, P.E., Chief
Monitoring and Analysis Section

THRU: Marvin E. Hora, Head
Ambient and Intensive Monitoring Unit

FROM : Daniel D. Helwig, Biologist DDH
Monitoring and Analysis Section

DATE: February 22, 1982

PHONE: 6-7288

SUBJECT: PAH SAMPLING FROM THE MISSISSIPPI RIVER AND THE METRO WASTE CONTROL -
ST. PAUL PLANT

US EPA RECORDS CENTER REGION 5



515437

Introduction:

The Solid and Hazardous Waste Division requested assistance to sample Polynuclear Aromatic Hydrocarbons (PAH) at the Metro Waste Control Commission (MWCC) - St. Paul Plant, the Mississippi River, and the Minnehaha Creek in a memo from Dale Wikre to Barry Schade, dated October 29, 1981. Richard Ferguson called a meeting on December 18, 1981. Marv Hora, Dave Maschwitz, and I attended. Sampling locations, sampling procedures, and sample replication were discussed. Rick summarized the results of the meeting and our later conversations in a memo dated January 11, 1982, to Marv Hora. Sampling was initiated on January 13 and finished on January 28. The details of the sampling program are discussed in this memo. The results are not available at this time.

Methods:

Mississippi River Samples

PAH and non-filtrable residue samples were taken from four sites on the Mississippi River on January 13, and again on January 19, 1982. The samples were taken from 1) the Minneapolis Water Works Plant (UM-859), 2) Ford Dam Generating Plant (UM-847), 3) Lambert's Landing (UM-840), and 4) near Grey Cloud Island (UM-827). (See Table 1). UM-859 was taken from a constantly flowing tap, directly off the intake line from the river, within the Softening Building of the Minneapolis Water Works Plant. UM-847 was taken with a sampling arm, from open water, immediately upstream of the bar screens to the Ford Generating Plant. UM-840 was taken with a sampling arm, through approximately 2" of ice, from Lambert's Landing. UM-827 was taken by hand through approximately 8" of ice, next to a barge mooring pier at the Larson Plant of Shieley, Inc., near Grey Cloud Island.

Grab samples were taken at all Mississippi River stations. Pre-washed glass gallon bottles (PAH) and glass liter bottles were filled directly from the river, to the top, with no sample pre-rinsing. A field blank accompanied the sample containers on the January 19 sampling but not on the January 13 sampling. An internal sample split with GCA Lab. was taken at the Ford Dam site on January 13. Internal splits with GCA Lab. and outside splits with the MDH (see Table 1) were taken at the Ford Dam and at the Grey Cloud Island site on January 19.

9605197

MWCC - St. Paul Plant

Twenty-four hour composite samples of the influent, effluent, and press cake were taken from the St. Paul Plant on January 18-19, January 20-21, January 25-26, and January 27-28 (See Table 1). The water samples were taken from MWCC automatic, flow-proportioning samplers, and from an Isco auto sampler designed for sampling priority pollutants. The press cake was taken from a conveyor belt leading away from the press cake frames.

Influent entering the St. Paul Plant is divided into East and West banks and further divided into 6 and 2 channels, respectively. The PAH samples were taken from the East Bank, Channels 2 and 5. A 50/50 mixture of the influent from MWCC flow-proportioning auto samplers Mag 2 and Mag 5 (see Figure 1) was used to represent the influent to the whole plant. PVC plastic pipe feed the auto samplers on a flow through basis. Although some contribution and/or uptake of PAH compounds from the pipe is recognized; they are assumed to have reached a steady state condition. To verify this assumption, an Isco sampler, designed for priority pollutants, was set up in the channel to sample from nearly the same point as the auto samplers. The Isco samples are not flow proportioned.

The effluent sample was taken from auto samplers "East Effluent" and "West Effluent". These samplers are similar to the influent samplers, providing flow proportioned composite samples. One sample each sampling day and from each bank was taken because of the differing treatment processes on the waste water.

The press cake sample was taken from a conveyor belt leading away from the press cake frames. An equal amount of press cake (by weight) was spooned into the sample jars each hour for 24 hours.

The influent and effluent from the auto samplers were taken from 6:00 A.M. to 6:00 A.M. as were the press cake samples. The influent Isco sample was taken from 11:00 A.M. to 11:00 A.M. No internal splits for GCA Lab were taken due to the analytical needs of MWCC. External splits for MDH were taken from the influent auto samplers, from the effluent auto west bank sampler, and from the press cake on January 20-21 and January 27-28. (See Table 1.) The press cake samples won't be analyzed by MDH until GCA Lab documents a methodology. All samples were picked up at noon, iced, and shipped overnight to GCA Lab. The shipping coolers were sealed with a MPCA tag with the GCA chain of custody lab sheets and sent with the "SSS Chain of Custody" service of Federal Express. All shipping documentation are enclosed.

DDH/drn

Attachment

9605198

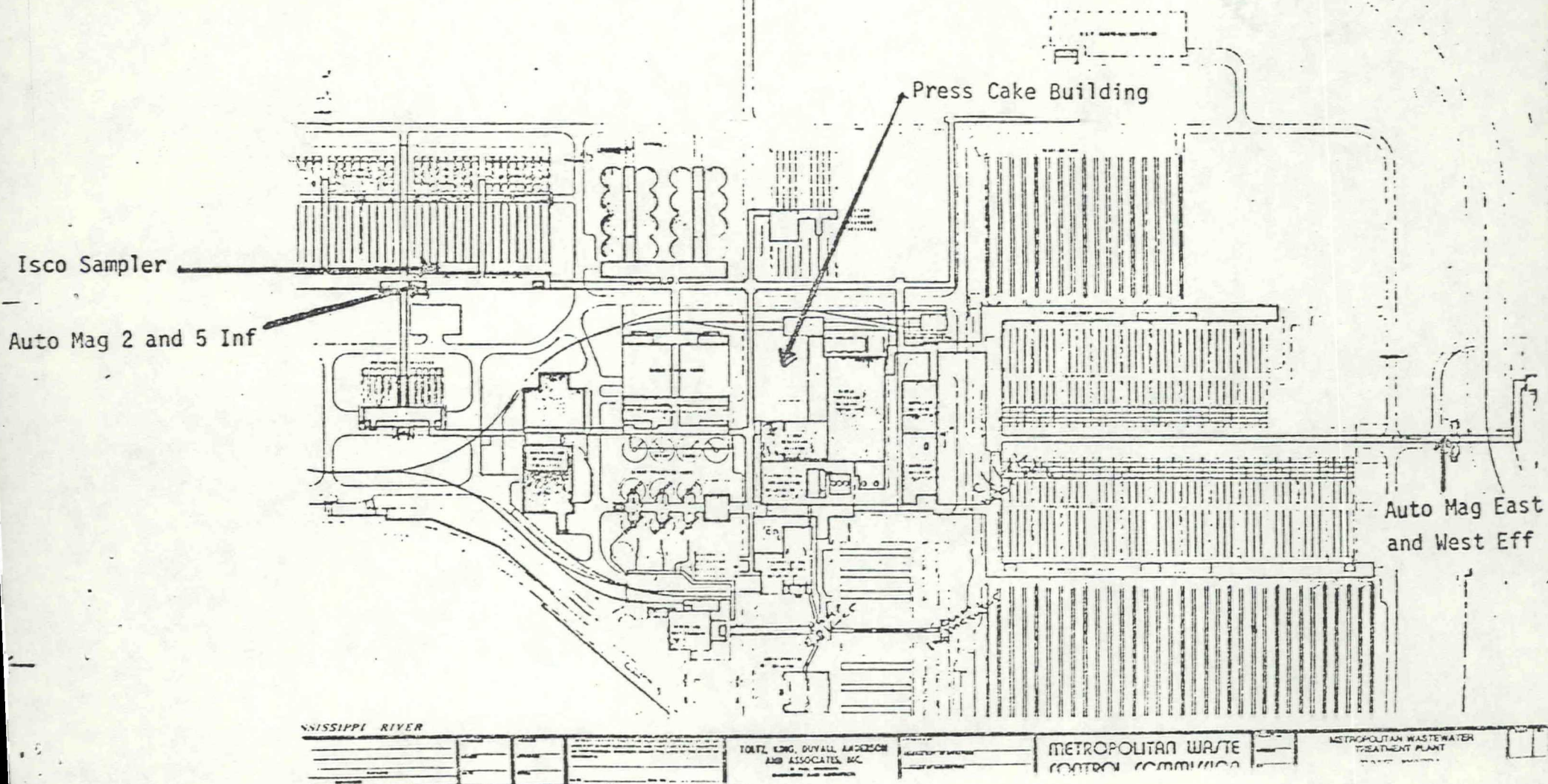
TABLE 1. "PAH" SAMPLING DATES, LOCATIONS, AND LABS

Date	Sample Location	Lab		
		GCA		MDH
		PAH	NFR*	PAH
January 13, 1982	Mississippi River (UM-859), Minneapolis Waterworks	1	1	
	Mississippi River (UM-847), Ford Dam	2	1	
	Mississippi River (UM-840), Lambert's Landing	1	1	
	Mississippi River (UM-827), Grey Cloud Island	1	1	
January 19, 1982	Mississippi River (UM-859), Minneapolis Waterworks	1	1	
	Mississippi River (UM-847), Ford Dam	2	1	1
	Mississippi River (UM-840), Lambert's Landing	1	1	
	Mississippi River (UM-827), Grey Cloud Island	2	1	1
	Field Blank	1		1
	Primary Influent East (I°INF E), MWCC	1		
	Secondary Effluent East (II°EFF E), MWCC	1		
	Secondary Effluent West (II°EFF W), MWCC	1		
	Plate and Frame Press Cake, MWCC	1		
January 21, 1982	Primary Influent East (I°INF E), MWCC	1		1
	Primary Influent East (Isco), MWCC	1		
	Secondary Effluent East (II°EFF E), MWCC	1		
	Secondary Effluent West (II°EFF W), MWCC	1		1
	Plate and Frame Press Cake, MWCC	1		1
	Field Blank	1		1
January 26, 1982	Primary Influent East (I°INF E), MWCC	1		
	Primary Influent East (Isco), MWCC	1		
	Secondary Effluent East (II°EFF E), MWCC	1		
	Secondary Effluent West (II°EFF W), MWCC	1		
	Plate and Frame Press Cake, MWCC	1		
	Field Blank	1		
January 28, 1982	Primary Influent East (I°INF E), MWCC	1		1
	Primary Influent East (Isco), MWCC	1		
	Secondary Effluent East (II°EFF E), MWCC	1		
	Secondary Effluent West (II°EFF W), MWCC	1		1
	Plate and Frame Press Cake, MWCC	1		1
	Field Blank	1		1
		34	8	11

* NFR = Nonfilterable Residue

9605199

FIGURE 1. MWCC - ST. PAUL PLANT, PAH SAMPLING LOCATIONS



0082000

OFFICE DE REGIONAL COUNSEL
SOUTH REGION V

JUN 28 1982

RECEIVED

RESULTS OF LABORATORY ANALYSIS
ST. LOUIS PARK SOIL BORINGS
ST. LOUIS PARK, MINNESOTA
SERCO LABORATORIES MARCH, 1978

BORING #1

Depth	Analyzed	Lab. No.	Total Solids Percent	Benzene extractables mg/kg dry weight	Phenolics mg/kg dry weight
5' - 6½'	X	1510	85.9	2300	0.67
12' - 13½'	X	1511	84.6	6300	4.6
17' - 18½'	-	-	-	-	-
24½' - 26'	X	1512	84.9	230	0.73
35' - 36½'	X	1513	88.8	600	1.1
40' - 41½'	-	-	-	-	-
44½' - 46'	X	1514	89.4	440	1.0
49½' - 51'	-	-	-	-	-
55' - 56½'	X	1515	88.4	370	0.35
60' - 60.4'	-	-	-	-	-
65' - 66½'	X	1516	89.1	96	0.53

BORING #2

Depth	Analyzed	Lab. No.	Total Solids Percent	Benzene extractables mg/kg dry weight	Phenolics mg/kg dry weight
5' - 6½'	X	1602	50.9	430	<0.2
10' - 11½'	-	1603	-	-	-
15' - 16½'	X	1604	84.8	240	<0.2
19½' - 21'	-	1605	-	-	-
24½' - 26'	X	1606	88.7	710	<0.2
39½' - 40'	X	1607	83.2	610	<0.2
44½' - 46'	X	1608	89.5	22	<0.2
49½' - 51'	-	1609	-	-	-
54½' - 56'	X	1610	88.9	517	<0.2
59½' - 61'	-	1611	-	-	-
64½' - 66'	X	1612	88.6	480	<0.2

007716

50004618

RESULTS OF LABORATORY ANALYSIS
ST. LOUIS PARK SOIL BORINGS
ST. LOUIS PARK, MINNESOTA
SERCO LABORATORIES MARCH, 1978

BORING #3

Depth	Analyzed	Lab. No.	Total Solids Percent	Benzene extractables mg/kg dry weight	Phenolics mg/kg dry weight
5½'-7'	X	1649	38.4	120	0.5
10'-11½'	-	1650	-	-	-
15½'-17'	X	1651	88.7	158	<0.2
20'-21½'	-	1652	-	-	-
30'-31½'	X	1653	85.5	281	0.4
35'-36½'	X	1654	90.4	14	<0.2
40½'-42'	-	1655	-	-	-
50'-51½'	X	1656	85.8	816	0.3
55'-56½'	X	1657	92.2	510	0.5
60'-61½'	-	1658	-	-	-
65'-66½'	X	1659	91.3	416	0.5

BORING #4

Depth	Analyzed	Lab. No.	Total Solids Percent	Benzene extractables mg/kg dry weight	Phenolics mg/kg dry weight
5'-6½'	X	1674	24.1	24000	1.2
10'-11½'	-	1675	-	40	<0.2
15'-16½'	X	1676	88.1	590	<0.2
20'-21½'	-	1677	-	-	-
25'-26½'	X	1678	87.8	615	<0.2
30'-31½'	-	1679	-	-	-
35'-36½'	X	1680	82.7	350	0.7
40'-41½'	-	1681	-	-	-
44½'-46'	X	1682	86.0	530	0.9
49½'-51'	-	1683	-	-	-
54½'-56'	X	1684	89.1	404	0.7
62'-63½'	X	1685	88.4	1470	<0.2
71'-71½'	-	1686	-	170	-

007717

500348.19

Revised

RESULTS OF LABORATORY ANALYSIS
ST. LOUIS PARK SOIL BORINGS
ST. LOUIS PARK, MINNESOTA
SERCO LABORATORIES MARCH, 1978

BORING #5

Depth	Analyzed	Lab. No.	Total Solids Percent	Benzene extractables mg/kg dry weight	Phenolics mg/kg dry weight
5' - 6½'	X	1728	13.8	34000	<0.2
10' - 11½'	-	1729	-	-	-
14½' - 16'	X	1730	37.5	8800	<0.2
20' - 21½'	-	1731	-	-	-
25' - 26½'	X	1732	37.2	10750	<0.2
30' - 31½'	X	1733	40.7	10000	<0.2
50' - 51½'	X	1734	90.2	95	<0.2
55' - 56½'	X	1735	86.9	520	<0.2
60' - 61½'	-	1736	-	-	-
65' - 66½'	X	1737	91.8	130	<0.2
70' - 71½'	-	1738	-	-	-

BORING #6

Depth	Analyzed	Lab. No.	Total Solids Percent	Benzene extractables mg/kg dry weight	Phenolics mg/kg dry weight
5' - 6½'	X	1801	29.7	7740	<0.2
10' - 11½'	-	1802	-	-	-
15' - 16½'	X	1803	44.9	4680	<0.2
20' - 21½'	-	1804	-	-	-
25' - 26½'	X	1805	29.6	11500	<0.2
30' - 31½'	-	1806	-	-	-
35' - 36½'	X	1807	72.1	1360	<0.2
40' - 41½'	-	1808	-	-	-
45' - 46½'	X	1809	86.6	59	0.2
50' - 51½'	-	1810	-	-	-
55' - 56½'	X	1811	89.4	168	0.2
60' - 61½'	-	1812	-	-	-
65' - 66½'	X	1813	91.8	260	<0.2
70' - 71½'	-	1814	-	-	-

007718

50034850

TABLE I

ST. LOUIS PARK SOIL BORINGS
COMPARATIVE ANALYTICAL DATA - VARIOUS SELECT BORINGS
MARCH, 1978 and OCTOBER, 1978

<u>Sample No.</u>	<u>Location</u>	<u>Designation</u>	<u>Date Collected</u>	<u>Phenols, mg/kg</u>	<u>Extractables, mg/kg</u>		
					<u>Benzene</u>	<u>Hexane</u>	<u>Cyclo hexane</u>
1952	Westwood Townhouses	Control Sample Peat Soil	3/31/78	-	22,300	-	-
1511	Louisiana Hwy Project	Boring #1 12½'-13½'	3/13/78	4.6	6,300	4,600*	5,700*
1682	Louisiana Hwy Project	Boring #4 44½'-46'	3/20/78	0.9	530	<50*	<50*
6784	Bowling Alley Site	Sample Site #1 4½'-7'	10/10/78	<0.2	170	60	<50
6887	Bowling Alley Site	Sample Site #2 14½'-17'	10/10/78	<0.2	80	<56	<50
6929	Development Site	Sample Site #3 4½'-7'	10/16/78	<0.3	204	204D	<50
7052	Development Site	Sample Site #4 4½'-7'	10/16/78	<0.3	<50	<54	<50
7331	Roseville Soil	Control Sample Sandy Soil	11/1/78	-	200	<50	<50

*Analyzed November, 1978 - Samples were frozen and retained.

D - Duplicate result.

50001226

007719

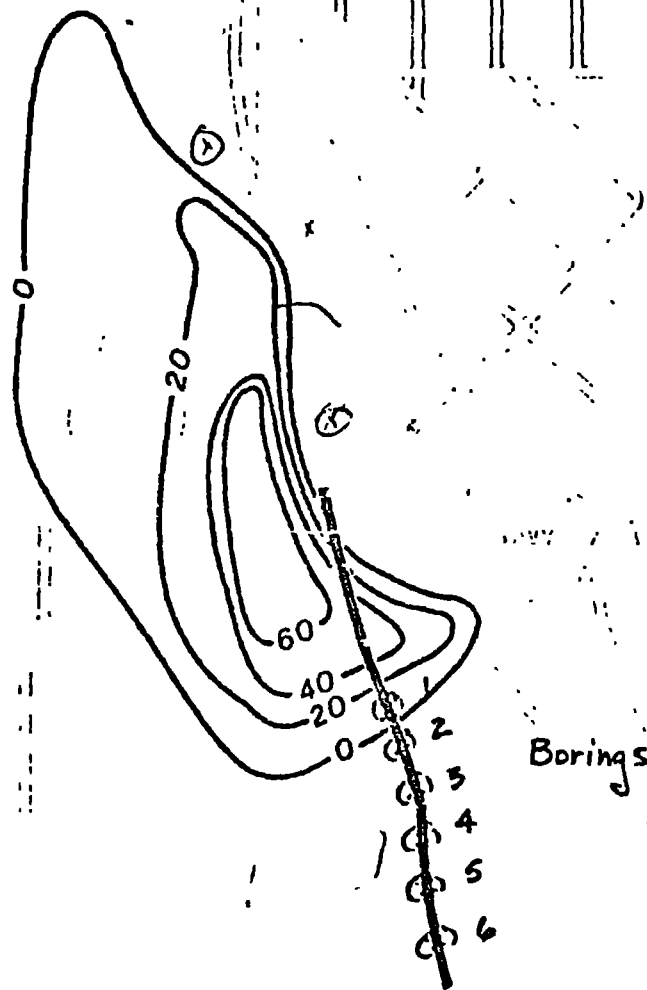


FIGURE 28

REMOVAL DEPTH CONTOURS
Soil With Phenolic Concentrations
Greater Than 1 mg/kg

50095031

007720

Health Dept
Feels this is
an appropriate
excavation

LOUISIANA AVENUE ALTERNATIVES

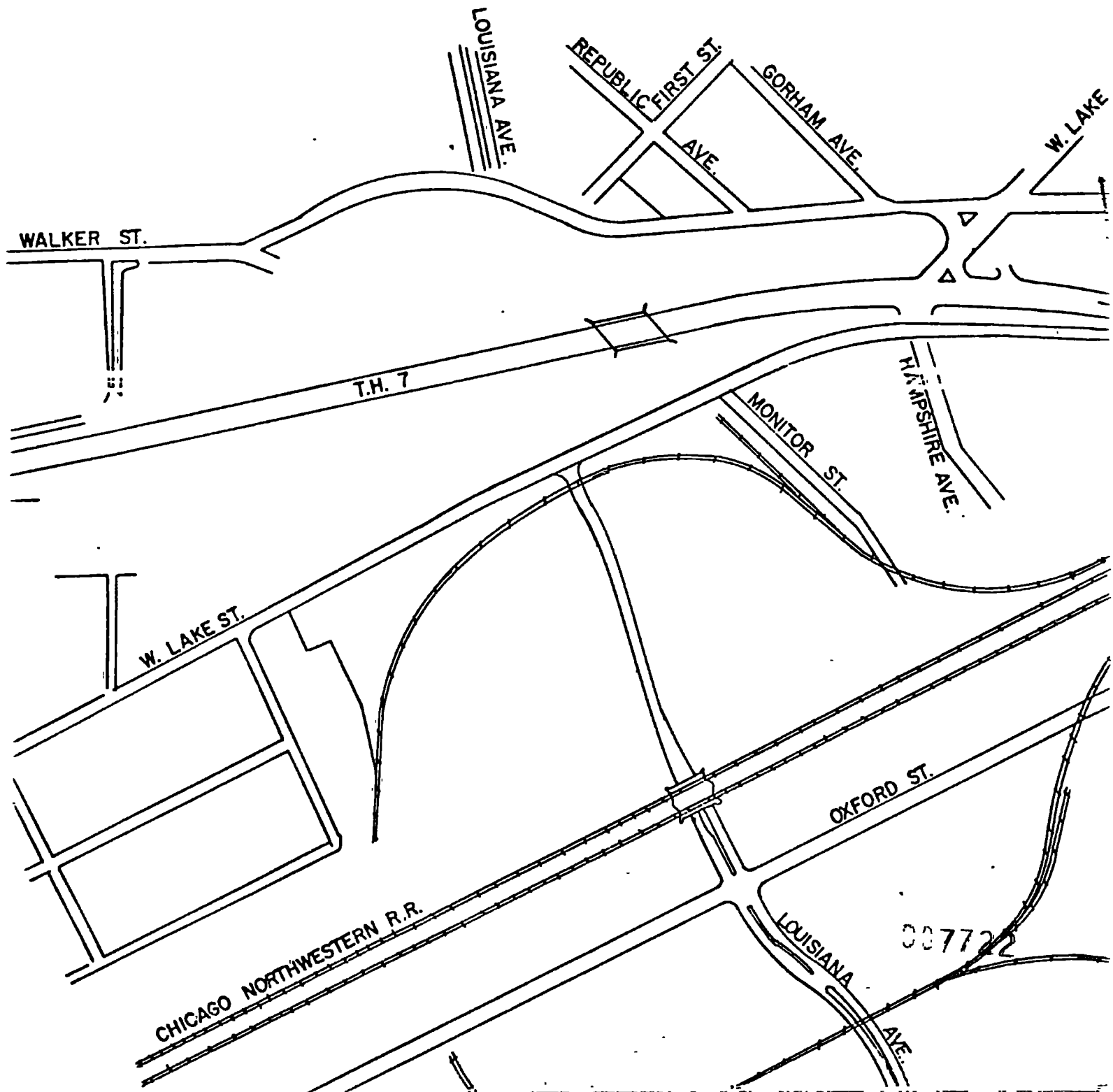
Oxford Street to Lake Street

February 19, 1980

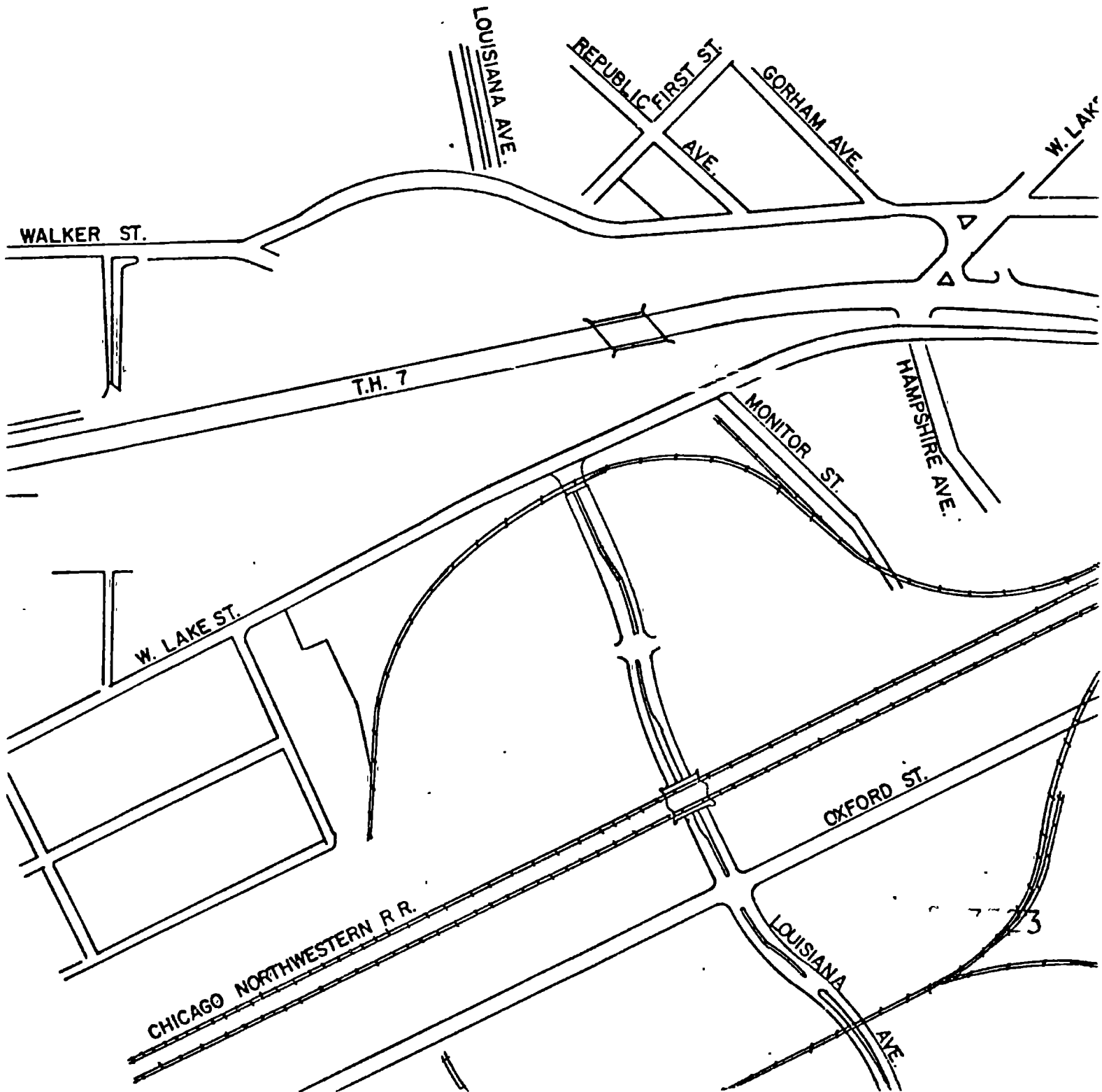
057721

Alternate A

Alternate A consists of a 30 foot wide bituminous surfaced roadway providing two 12 foot wide lanes and 3 foot wide shoulders between the new railroad structures and Lake Street. Drainage would be in ditches to the in-place storm sewer. All of the construction would be at existing grade, or above, with the exception of subcutting for base construction, ditch construction, and the cut required for matching the in-place roadway at the new railroad bridge.

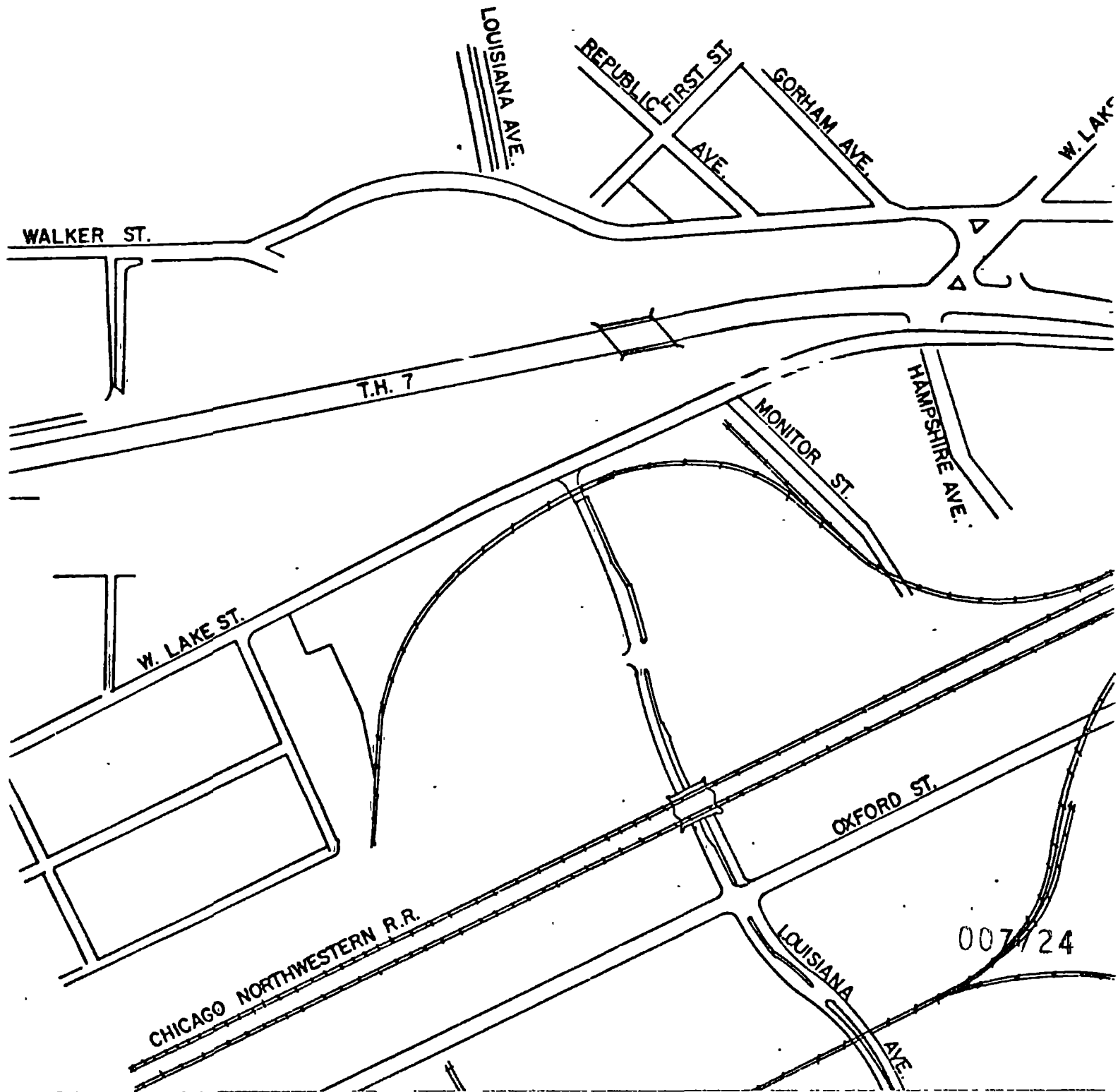


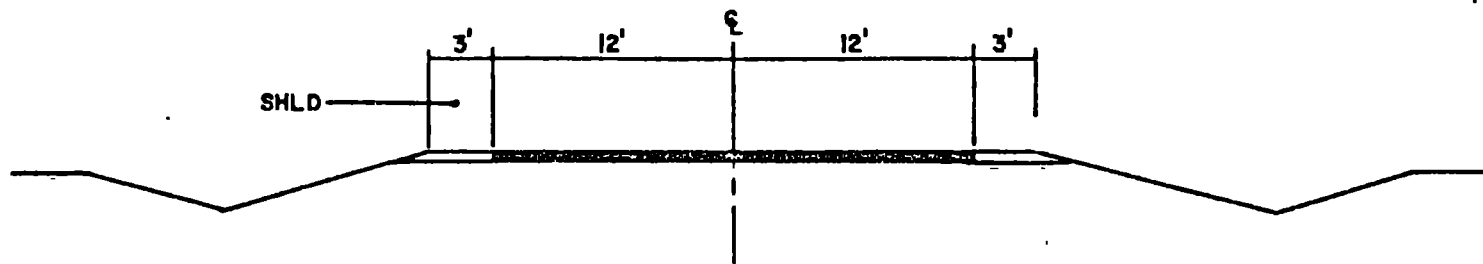
Alternate B. Alternate B would involve the construction of Louisiana Avenue as originally proposed between the new railroad bridge and the railroad spur track just south of Lake Street. Construction would include the excavation of inadequate foundation soils, the placement of storm sewer and other proposed utilities, and all other elements required for a four lane divided roadway with curb and gutter.



Alternate C

Alternate C would involve construction of the two southbound lanes of the four lane Louisiana Avenue between the new railroad structures and the railroad spur track south of Lake Street, in accordance with the original plan. The main storm sewer trunk line would be required for drainage. Subcutting for correction of subsoils would be required to the extent of the necessary avoidance of undercutting the existing roadway during future construction of the north bound lanes.

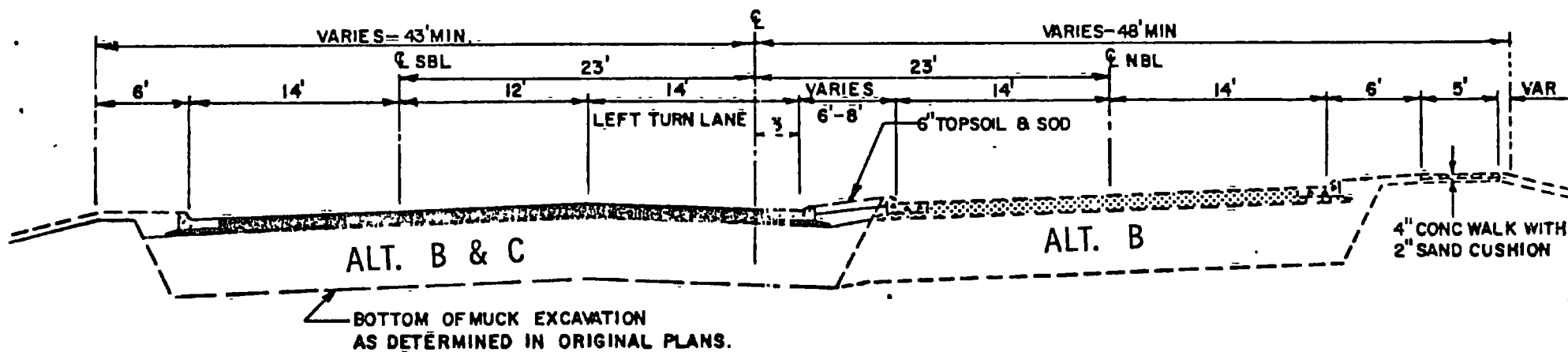




207725

TEMPORARY LOUISIANA AVENUE

NEW RR BRIDGES TO LAKE ST.



LOUISIANA AVENUE

OXFORD ST. TO LAKE ST.

FUNDING SOURCE

	<u>City</u>	<u>State Aid</u>	<u>FAU</u>	<u>Total</u>
Alternative A	89,100	-	-	89,100
Alternative B	163,000	-	419,100	582,100
Alternative C	91,300	-	235,400	326,700

007726